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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,890	01/22/2004	George Adamson	VT-2406	6018

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VALENCE TECHNOLOGY, INC.
301 CONESTOGA WAY
HENDERSON, NV 89015

EXAMINER

PARSONS, THOMAS H

ART UNIT PAPER NUMBER

1745

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/763,890	Applicant(s) ADAMSON ET AL.	
	Examiner Thomas H. Parsons	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-83 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-83 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

Page 22, line 22, suggest changing "this" to --is--.

Appropriate correction is required.

Claim Objections

2. Claim 32 is objected to because of the following informalities:

Suggest changing "a is Li" to --A is Li--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6, 8-12, 14, 16, 18, 23-25, 28-31, 33-38, 40-44, 46, 48, 50, 55-57, 60-63 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 1 150 367.

Claim 1: EP 1 150 367 (hereafter EP '367) discloses a compound represented by the nominal general formula:

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wherein:

- (i) A is selected from the group consisting of elements from Group I of the Periodic Table, and mixtures thereof, and $0 < a \leq 9$; (specifically, Li_x wherein $0 < x \leq 2$)
- (ii) at least one of M (e.g. Mn), MI (e.g. Fe) and MII (Ti or Mg) is a redox active element, $0 < m, n, o \leq 4$, (e.g., $0 < m, n, o \leq 2$) and $\frac{1}{2}[V(MI) + V(MII)] = V(M)$, wherein $V(M)$ is the valence state of M, $V(MI)$ is the valence state of MI, and $V(MII)$ is the valence state of MII;
- (iii) XY_4 is selected from the group consisting of $X'[O_{4-x},Y'_x]$, $X'[O_{4-y},Y'_{2y}]$, $X''S_4$, $(X_z''',X'_{1-z}O_4)$, and mixtures thereof (e.g. PO_4), wherein:
- (a) X' and X''' are each independently selected from the group consisting of P, As, Sb, Si, Ge, V, S, and mixtures thereof;
- (b) X'' is selected from the group consisting of P, As, Sb, Si, Ge, V, and mixtures thereof (e.g. P),
- (c) Y' is selected from the group consisting of a halogen, S, N, and mixtures thereof, and
- d) $0 \leq x \leq 3$, $0 \leq y \leq 2$, $0 \leq z \leq 1$, and $1 \leq d \leq b$; and
- (iv) Z is selected from the group consisting of a hydroxyl (OH), a halogen, and mixtures thereof, and $0 \leq e \leq 4$ (e.g. $Z = 4$);

wherein A, M, MI, MII X, Y, Z, a, m, n, o, d, and e are selected so as to maintain electroneutrality of the compound. See page 4, paragraph [0028], page 11, paragraphs [0067]-[0068], page 27, paragraphs [0183]-[0190], and page 33, paragraphs [0228]-[0240].

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Further, since A, M, MI, MII X, Y, Z, a, m, n, o, d, and e are the same as that instantly disclose, one skilled in the art would expect the an electroneutral compound.

Claims 2 and 34: EP '367 discloses A selected from the group consisting of Li (page 4, paragraph [0028]).

Claims 3 and 35: EP '367 discloses that A is Li (page 4, paragraph [0028]).

Claims 4 and 36: EP '367 discloses that M, MI and MII are each a redox active element. More particularly, EP '367 on page 4, paragraph [0028] discloses M=Mn, MI=Fe and MII = Ti which are instantly defined as redox active elements.

Claims 5 and 37: EP '367 on page 4, paragraph [0028] discloses MI selected from the group consisting of redox active elements with a 2+ oxidation state, 3+ oxidation, and mixtures thereof. More particularly, EP '367 disclose MI=Mn which is instantly defined as having a 2+ oxidation state and 3+ oxidation.

Claims 6, 8, 12, 14, 16, 18, 23, 38, 40, 44, 46, 48, 50, and 55: EP '367 on page 4, paragraph [0028] discloses that at least one of M and MII is a non-redox active element. More particularly, EP '367 discloses that MII = Mg which is instantly defined as a non-redox active agent.

Claims 9 and 41: EP '367 discloses MI selected from the group consisting of Ti^{2+} , V^{2+} , C^{2+} , Mn^{2+} , Fe^{2+} , Co^{2+} , Ni^{2+} , Cu^{2+} , Mo^{2+} , Si^{2+} , Sn^{2+} , Pb^{2+} , and mixtures thereof. More particularly, EP on page 4, paragraph [0028] discloses MI selected from the group consisting of Fe which is instantly defined as a redox active element having a 2+ oxidation state.

Claims 10 and 42: The rejection of claim 10 is as set forth above in claim 6.

Claims 11 and 43: EP '367 discloses MI selected from the group consisting of Ti^{3+} , V^{3+} , Cr^{3+} , Mn^{3+} , Fe^{3+} , Co^{3+} , Ni^{3+} , Mo^{3+} , Nb^{3+} , and mixtures thereof. More particularly, EP on page 4, paragraph [0028] discloses MI selected from the group consisting of Fe which is instantly defined as a redox active element having a 3+ oxidation state.

Claims 24, 25, 56, and 57: EP '367 discloses XY_4 selected from the group consisting of PO_4 . See page 4, paragraph [0028], page 11, paragraphs [0067]-[0068], page 27, paragraphs [0183]-[0190], and page 33, paragraphs [0228]-[0240].

Claims 28 and 60: EP '367 discloses that $e=0$. See page 4, paragraph [0028], page 11, paragraphs [0067]-[0068], page 27, paragraphs [0183]-[0190], and page, paragraphs [0228]-[0240].

Claims 29 and 61: EP '367 discloses that the compound is represented by the nominal general formula $A_a[E_{m-n-o}, MI_n, MII_o](XY_4)_dZ_e$. See page 4, paragraph [0028], page 11, paragraphs [0067]-[0068], page 27, paragraphs [0183]-[0190], and page 33, paragraphs [0228]-[0240].

Claims 30 and 62: EP '367 disclose that the compound is represented by the nominal general formula $A_a[M_{m/V(M)}^{0/V(M)}, MI_n^{0/V(M)}, MII_o^{0/V(MII)}](XY_4)_dZ_e$. Because the composition of the compound of EP '367 is the same as that instantly disclosed, one skill in the art would expect the compound of EP '367 to provide the claimed nominal general formula.

Claims 31 and 63: EP '367 discloses that $d=1$; A is Li; and $XY_4 = PO_4$. See page 4, paragraph [0028], page 11, paragraphs [0067]-[0068], page 27, paragraphs [0183]-[0190], and page 33, paragraphs [0228]-[0240].

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Claim 33: The rejection of claim 33 is as set forth above in claim 1 wherein further EP '367 in Figure 1 discloses a first electrode (positive electrode 1) comprising the claimed compound, a second counter electrode (2) comprising an intercalation active material; and electrolyte (6) page 10, paragraphs [0115]-[

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7, 13, 15, 17, 19-22, 26-27, 32, 39, 45, 47, 49, 51-54, 58-59, 64-83 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1 150 367 as applied to claims 1, 4 and 5 above, and further in view of Barker (6,153,333).

EP '367 is as applied, argued, and disclosed above, and incorporated herein.

Claims 7 and 39: EP '367 does not disclose MI selected from the group consisting of Cu^{1+} . Barker discloses MI selected from the group consisting of Cu^{1+} (col. 2: 46 – col. 3: 66, col. 5: 9-31, and col. 6: 24 – col. 8: 5).

Claims 13 and 45: EP '367 does not disclose MI selected from the group consisting of non-redox active elements with a 1+ oxidation state, 2+ oxidation state, 3+ oxidation state and mixtures thereof. Barker discloses MI selected from the group consisting of non-redox active

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elements with a 1+ oxidation state, 2+ oxidation state, 3+ oxidation state and mixtures thereof (col. 2: 46 – col. 3: 66, col. 5: 9-31, and col. 6: 24 – col. 8: 5).

Claims 15 and 47: EP '367 does not disclose MI is selected from the group consisting of Li^{1+} , K^{1+} , Na^{1+} , Ru^{1+} , Cs^{1+} , and mixtures thereof. Barker discloses MI selected from the group consisting of Li^{1+} , K^{1+} , Na^{1+} , Ru^{1+} , Cs^{1+} , and mixtures thereof (col. 2: 46 – col. 3: 66, col. 5: 9-31, and col. 6: 24 – col. 8: 5).

Claims 17 and 49: EP '367 does not disclose MI selected from the group consisting of Be^{2+} , Mg^{2+} , Ca^{2+} , S^{2+} , Ba^{2+} , Zn^{2+} , Cd^{2+} , C^{2+} , Ge^{2+} . Barker discloses MI selected from the group consisting of Be^{2+} , Mg^{2+} , Ca^{2+} , S^{2+} , Ba^{2+} , Zn^{2+} , Cd^{2+} , C^{2+} , Ge^{2+} . (col. 2: 46 – col. 3: 66, col. 5: 9-31, and col. 6: 24 – col. 8: 5).

Claims 19 and 51: EP '367 does not disclose MI selected from the group consisting of Be^{2+} , Mg^{2+} , Ca^{2+} , S^{2+} , Ba^{2+} , and mixtures thereof. Barker discloses MI selected from the group consisting of Be^{2+} , Mg^{2+} , Ca^{2+} , S^{2+} , Ba^{2+} , and mixtures thereof (col. 2: 46 – col. 3: 66, col. 5: 9-31, and col. 6: 24 – col. 8: 5).

Claims 20 and 52: EP '367 does not disclose MI selected from the group consisting of Zn^{2+} , Cd^{2+} , and mixtures thereof. Barker discloses MI selected from the group consisting of Zn^{2+} , Cd^{2+} , and mixtures thereof (col. 2: 46 – col. 3: 66, col. 5: 9-31, and col. 6: 24 – col. 8: 5).

Claims 21 and 53: EP '367 does not disclose MI is selected from the group consisting of C^{2+} , Ge^{2+} , and mixtures thereof. Barker discloses MI selected from the group consisting of C^{2+} , Ge^{2+} , and mixtures thereof (col. 2: 46 – col. 3: 66, col. 5: 9-31, and col. 6: 24 – col. 8: 5).

Claims 22 and 54: EP '367 does not disclose MI is selected from the group consisting Sc^{3+} , Y^{3+} , B^{3+} , Al^{3+} , Ga^{3+} and mixtures thereof. Barker discloses MI selected from the group

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consisting Sc^{3+} , Y^{3+} , B^{3+} , Al^{3+} , Ga^{3+} and mixtures thereof (col. 2: 46 – col. 3: 66, col. 5: 9-31, and col. 6: 24 – col. 8: 5).

Claims 26 and 58: EP '367 does not disclose Z selected from the group consisting of OH, F, Cl, Br, and mixtures thereof. Barker discloses Z selected from the group consisting of OH, F, Cl, Br, and mixtures thereof (col. 5: 10-13).

Claims 27 and 57: EP '367 does not disclose that Z is F. Barker discloses that Z is F (col. 5: 10-13).

Claims 32 and 64: EP '367 does not disclose that $d=3$; A is Li; and $\text{XY}_4 = \text{PO}_4$. Barker discloses that $d=$; A is Li; and $\text{XY}_4 = \text{PO}_4$. (col. 2: 46 – col. 3: 66, col. 5: 9-31, and col. 6: 24 – col. 8: 5).

Claim 65: EP '367 does not disclose the first electrode further comprising an electrically conductive diluent, and a binder. Barker discloses the first electrode further comprises an electrically conductive diluent, and a binder (col. 9: 58 – col. 10: 15).

Claim 66: EP '367 does not disclose that the electrically conductive diluent is carbon. Barker et al. disclose that the electrically conductive diluent is carbon (col. 9: 58 – col. 10: 15).

Claim 67: EP '367 does not disclose that the electrically conductive diluent is carbon black. Barker et al. disclose that the electrically conductive diluent is carbon black (col. 9: 58 – col. 10: 15).

Claim 68: EP '367 does not disclose that the first electrode comprises from 5 to 30% by weight carbon black. Barker discloses that the first electrode comprises from 5 to 30% by weight carbon black (col. 9: 58 – col. 10: 15).

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Claim 69: EP '367 does not disclose that the binder is a copolymer of polyvinylidene difluoride (PVdF) and hexafluoropropylene (HFP). Barker discloses that the binder is a copolymer of polyvinylidene difluoride (PVdF) and hexafluoropropylene (HFP) (col. 9: 58 – col. 10: 15).

Claim 70: EP '367 does not disclose that the first electrode comprises from 3 to 20% by weight binder. Barker discloses that the first electrode comprises from 3 to 20% by weight binder (col. 9: 58 – col. 10: 15).

Claim 71: EP '367 does not disclose that the second electrode comprises an insertion active material. Barker discloses that the second electrode comprises an insertion active material (col. 9: 58 – col. 10: 15).

Claim 72: EP '367 does not disclose that the insertion active material is selected from the group consisting of a metal oxide, metal chalcogenide, carbon, graphite, and mixtures thereof. Barker discloses that the insertion active material is selected from the group consisting of a metal oxide, metal chalcogenide, carbon, graphite, and mixtures thereof (col. 9: 58 – col. 10: 15).

Claim 73: EP '367 does not disclose that the insertion active material is graphite. Barker discloses that the insertion active material is graphite (col. 9: 58 – col. 10: 15).

Claim 74: EP '367 does not disclose that the first and second electrodes each further comprise an electrically conductive diluent, and a binder. Barker discloses that the first and second electrodes each further comprise an electrically conductive diluent, and a binder (col. 9: 58 – col. 10: 15).

Claim 75: EP '367 does not disclose that the electrically conductive diluent is carbon. Barker discloses that that the electrically conductive diluent is carbon (col. 9: 58 – col. 10: 15).

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Claim 76: EP '367 does not disclose that the electrically conductive diluent is carbon black. Barker discloses that the electrically conductive diluent is carbon black (col. 9: 58 – col. 10: 15).

Claim 77: EP '367 does not disclose that the first and second electrode each comprise from 5 to 30% by weight carbon black. Barker discloses that the first and second electrode each comprise from 5 to 30% by weight carbon black (col. 9: 58 – col. 10: 15).

Claim 78: EP '367 does not disclose that the binder is a copolymer of polyvinylidene difluoride (PVdF) and hexafluoropropylene (HFP). Barker discloses that the binder is a copolymer of polyvinylidene difluoride (PVdF) and hexafluoropropylene (HFP) (col. 9: 58 – col. 10: 15).

Claim 79: EP '367 does not disclose that the first and second electrode each comprise from 3 to 20% by weight binder. Barker discloses that first and second electrode each comprise from 3 to 20% by weight binder (col. 9: 58 – col. 10: 15).

Claim 80: EP '367 does not disclose that the electrolyte comprises a lithium salt and a solvent selected from the group consisting of dimethyl carbonate (DMC), diethylcarbonate (DEC), dipropylcarbonate (DPC), ethylmethylcarbonate (EMC), ethylene carbonate (EC), propylene carbonate (PC), butylene carbonate, lactones, esters, glymes, sulfoxides, sulfolanes, and mixtures thereof. Barker discloses that the electrolyte comprises a lithium salt and a solvent selected from the group consisting of dimethyl carbonate (DMC), diethylcarbonate (DEC), dipropylcarbonate (DPC), ethylmethylcarbonate (EMC), ethylene carbonate (EC), propylene carbonate (PC), butylene carbonate, lactones, esters, glymes, sulfoxides, sulfolanes, and mixtures thereof (col. 9: 58 – col. 10: 15).

Claim 81: EP '367 does not disclose that the electrolyte comprises a solvent selected from the group consisting of EC/DMC, EC/DEC, EC/DPC and EC/EMC. Barker discloses that the electrolyte comprises a solvent selected from the group consisting of EC/DMC, EC/DEC, EC/DPC and EC/EMC (col. 9: 58 – col. 10: 15).

Claim 82: EP '367 does not disclose that the electrolyte comprises from 5% to 65% by weight lithium salt. Barker discloses that the electrolyte comprises from 5% to 65% by weight lithium salt (col. 9: 58 – col. 10: 15).

Claim 83: EP '367 does not disclose that the electrolyte comprises from 8% to 35% by weight lithium salt. Barker discloses that the electrolyte comprises from 5% to 35% by weight lithium salt (col. 9: 58 – col. 10: 15).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the compound of EP '367 by replacing MI, Z, d, the first and second electrode, and electrolyte with the MI, Z, d, first and second electrode and electrolyte of Barker because both are concerned with lithium phosphates of the same formula, and Barker teaches a lithium phosphate having a very high capacity when used as cathode material rechargeable lithium batteries, a lithium phosphate that is relatively easy to make, readily adaptable to commercial production, relatively low in cost, and has very good specific capacity (col. 4: 14-39) thereby improving the overall cost and performance of the battery.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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U.S. Patent No. 6,136,427 issued to Barker et al. on 24 October 2000 discloses and electrode containing lithium containing silicon phosphates.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H. Parsons whose telephone number is (571) 272-1290. The examiner can normally be reached on M-F (7:00-4:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thomas H Parsons
Examiner
Art Unit 1745


PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER